REMARKS

I. The Status of Claims.

Claims 1-14 were originally presented for examination before the United States Patent and Trademark Office (the "Office") with filing of a patent application on April 12, 2001. A first Office Action has been provided after examination of the application, for which this paper is being filed in response. The first Office Action provides the following: objection to Claims 1-9 under 35 U.S.C. § 112, second paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertain, or with which it is most nearly connected, to make and/or use the invention; objection to Claims 1-9 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention; rejection of Claims 1-3 and 5-8 under 35 U.S.C. § 102(b) as being anticipated by Korah et al (US No. 6,115,111); rejection of Claims 4 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Korah et al (US No. 6,115,111); and provisional rejection of Claim 1-9 under the judicially created doctrine of obviousness-type double patenting doctrine as being unpatentable over claims contained in co-pending Application Nos. 09/834,244 and 09/824,242.

II. Provisional "Double-Patenting" Rejection.

Applicants have inserted a paragraph at the beginning of their application that makes proper reference to all co-pending patent applications. Applicants believe that

over claims contained in co-pending Application Nos. 09/834,244 and 09/824,242.

III. Objection under 35 U.S.C. § 112, first paragraph.

Claims 1-9 were rejected by the Patent Office under 35 U.S.C. §112, first paragraph. The Examiner states that claims 1-9 contain subject matter which is not described in the specification in such a way as to enable one skilled in the art to which it pertain, or with which it is most nearly connected, to make and/or use the invention. Examiner suggests that the exact operation/performances of the motion analysis module are not taught where Applicants describe that the motion analysis module is used to determination motion characteristic of an object. Applicants respectfully traverse the rejection.

Applicants describe how target motion sensing within an environment is detected starting at page 16, last paragraph and continuing through page 18, line 14 of the specification. More specifically, on page 17, lines 3, the application provides:

> "[a] *laser signal can be emitted into an environment* 100 from each of the emission apertures." At line 14, "[t]he *motion analysis module 107 determines motion characteristics* of a object detected within said environment where *the laser source 105 emits at least two laser signals into an environment* occupied by a target 110, *at least one detector 103 detects changes in said at least two laser signals* after signals pass through environment 100 and interfere with a detected object 110, and *microprocessor 101 determines target characteristics* based on signals received by detector 103 and input from said motion analysis module 107."

Emphasis added.

is well known by all that a person can physically observe the motion of an automobile, airplane, another person over a very short duration (time) by visually observing

(acquiring and processing) a target's position in a frame of reference (movement within an environment). Just how a determination of motion is accomplished by Applicants' invention should certainly be clear to the skilled from the Applicants' description where at least two signals are described as being emitted into an environment wherein a target is moving, and the signals are then analyzed by a microprocessor using relatively simple, and well known, motion algorithms (motion analysis module) which are used by a microprocessor to determine a targets position within the frame of reference over time. It can safely be assumed that the skilled would appreciate the basic physical attributes and input that would be necessary by Applicants' system in attempting to determine a targets motions within an environment where it is acquiring at least two signals. A radar technician, for example, would easily understand how motion is being determined using the principle of target acquisition over time based on the return of signals to a detector, and the analysis of a target changing position in the environment (over time) as represented by the signals acquired by a system.

Applicants do not claim to have invented target motion analysis in general. What is novel about Applicants' invention, as claimed, is that a semiconductor-based system is providing laser signals (at least two) into an environment containing a target and a detector can detect the signals after their passage through the environment and about the target and provide the signal data to a microprocessor, which can use a "motion analysis module" (which can be an algorithm) to determine the target's motion within the environment. Applicants believe that they have provided a description that would enable one skilled in the art to make and/or use the invention because a teaching of basic motion analysis theory is not required for the skilled to understand that Applicants' system can use a well-known characteristic of "target position in an

respectfully traversed.

IV. Objection under 35 U.S.C. § 112, second paragraph.

Claims 1-9 were rejected by the Patent Office under 35 U.S.C. §112, first paragraph. Claim 2-4 and 6-9 were determined to be indefinite because they depend from Claims 1 and 5.

Regarding Claim 1, The Examiner states that the citation of "a motion analysis module for determining motion characteristics of an objected detected" on lines 7-8 is vague. The Examiner does not understand how and in what manner motion characteristics can be determined or achieved. Examiner refers to lines 12-14 of Claim 1 as being vague because the "signals received by said detector and input from said motion analysis module" have not be clearly defined. The Examiner also asks whether "an object detected", "a target" and "a detected object" are the same element. Clarification is sought by the Examiner as to whether determinations of the microprocessor and motion analysis module are the same.

Applicants have amended Claim 1 to clarify language regarding the "motion analysis module." The text of lines 7-8 now read as follows: "a motion analysis module in communication with said microprocessor for determining object motion". Lines 9-13 have been amended to further clarify language contained therein and now read as follows: "wherein said laser source emits at least two laser signals into an environment, said at elat one detector receives said at least two laser signals after said signals pass through said environment and interfere with a target, and said microprocessor determines said target's motion based on differences between said signals received by said detector and input from said motion analysis module regarding object motion determination."

that the microprocessor makes a determination of any motion by a target based on input from the detector, which can only be provided in the form of signals acquired

from the environment, and input from the motion analysis module, which can be appreciated by those skilled in the art to be an algorithm that the microprocessor performs to render a basic calculation of target position over time.

As described in detail regarding the §112, first paragraph, rejection above, Applicants believe that they have provided a description that would enable one skilled in the art to make and/or use the invention because a teaching of basic motion analysis theory is not required for the skilled to understand that Applicants' system can use a well-known characteristic of "target position in an environment over time" to determine motion using a novel system and associated methods, which have been properly described.

For the above reasons, the rejection of Claims 1-4 is respectfully traversed.

Regarding Claim 5, the Examiner has concerns similar to those cited above for Claim 1, but includes the issue of vagueness regarding citation to "a memory for storing characteristics of a monitored environment" on line 6 of claim 5. Claims 6-9 were determined to be indefinite because they depend from Claim 5. Amendments similar to those provided by Applicants for Claim 1 have been provided for Claim 5. The text of lines 7-8 now read as follows: "a motion analysis module in communication with said microprocessor for determining object motion". Lines 9-13 have been amended to further clarify language contained therein and now read as follows: "wherein said laser source emits at least two laser signals into an environment, said at least one detector receives said at least two laser signals after said signals pass through said environment and interfere with a target, and said microprocessor determines said target's motion based on differences between said signals received

As with Claims 1, Applicants believe that they have provided a description that would enable one skilled in the art to make and/or use the invention set forth in Claim 5 because a teaching of basic motion analysis theory is not required for the skilled to understand that Applicants' system can use a well-known characteristic of "target position in an environment over time" to determine motion using a novel system and associated methods, which have been properly described.

For the above reasons, the rejection of Claims 5-9 is respectfully traversed.

V. Rejection of Claims 1-9 as unpatentable over Korah et al. under 35 U.S.C. §102(b).

Claim 1-3 and 5-8 currently stand rejected by the Office under 35 U.S.C. § 102(b) as being anticipated by Korah et al (patent 6,115,111). The rejection is respectfully traversed.

A number of differences exist between Applicants' invention and that of Korah et al. Korah et al does not sequence its lasers (e.g. on/off) during operation as taught by Applicants. Furthermore, Korah et al clearly teaches the monitoring of laser interferences, which is determiend through measurements of current and voltage changes directly at the laser sources themselves that result from luminous interferences. Korah et al does not use a detector to receive light signals as part of a system or method for monitoring changes in target location ("motion"). Korah et al is not interested in relectance, blockage or interruption of laser signals through its detector to determine target characteristics, such as a target's motion. The CCD shown and described in Korah et al is not a detector for use as taught by Applicants.

and laser. Korah et al's laser are the only components wherein interference from the field of view described therein have an effect on the system.

For these reasons, the rejection is respectfully traversed.

VI. Rejection of Claims 4 and 9 as being unpatentable over Korah et al. under 35 U.S.C. §103(a).

Claim 4 and 9 currently stand rejected by the Office under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,115,111 issued to Korah et al. The rejection is respectfully traversed.

As with the arguments provided in the previous section, Korah is not interested in determining the motion of a target. The Examiner cites to Korah et al's use of a CCD, but states that it would be obvious to use a photodiode in place of Korah et al's CCD to render a system like Applicants'. Korah et al., however, is not sensing or detecting target charteristics, especially not target motion, using the CCD described therein. Korah et al's only attempt to acquire differences in signals from its environment occurs through monitoring of interferences at the laser sources themselves. Once skilled in the art could not arrive at a system like Appliants' using the teachings of Korah et al. For the above reasons, the rejection is respectfully traversed.

V. Conclusion

Attached hereto is a marked-up version of the changes made to the Specification and Claims by the current response, which is captioned "VERSIONS

every objection and rejection of the Official Action, and respectfully request that a timely Notice of Allowance be issued. Applicants respectfully submit that the

foregoing discussion does not present new issues for consideration and that no new search is necessitated. Accordingly, Applicants respectfully request reconsideration and withdrawal of the objections and the rejections and request timely issuance of the present application.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned representative to conduct an interview in an effort to expedite prosecution in connection with the present application.

Respectfully submitted for,

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VERSIONS WITH MARKING TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please insert the following paragraph on 1 after the Title (as amended) and the paragraph entitled "TECHNICAL FIELD":

--RELATED CO-PENDING APPLICATIONS

The present invention is related to the following co-pending patent applications: Serial No. 09/724,819 entitled "Multiple Laser Optical Sensing Systems and Methods," filed November 28, 2000; Serial No. 09/834,220 entitled "Systems and Methods for Optically Identifying Objects," filed April 12, 2001; Serial No. 09/834,242 entitled "Trainable Laser Optical Sensing Systems and Methods," filed April 12, 2001; and Serial No. 09/834,244 entitled "Laser Optical Area Scanner and Response System," filed April 12, 2001.--

Page 8, lines 8, 14 and 23 of the application should be amended as follows:

[Fig.]Figs. 2(A-B) illustrate diagrams of a vertical cavity surface emitting laser structure emitting two different patterns of light signals 2(a) and 2(b);

FIG. 3 illustrates a diagram of a target blocking a light signal statically emitted from a vertical cavity surface emitting laser structure before it reaches a detector;

[illegible] structure cycling through different emission patterns of light signals to determine a map of the target. In 4(a) light signals forming a vertical

line are blocked by a vertical bar-shaped target and none reach a detector. When a different pattern of signals is emitted as in 4(b), forming a right angle, one signal reaches the detector. In the presence of a right angle-shaped target as in 4(c), however, the same right angle-shaped pattern as emitted in 4(b) would be blocked;

[Fig.]Figs. 5(A-B) illustrate diagrams of a vertical cavity surface emitting laser structure emitting the same pattern of light signals in 5(a) and 5(b). In 5(a) a target blocks all emitted signals, whereas in 5(b) a different target does not block all signals, allowing recognition of a specified target only;

Page 9, lines 5 and 9 of the application should be amended as follows:

[Fig.]Figs. 6(A-B) illustrate diagrams of emitted light signals passing through 6(a) a single lens producing a magnified image of the emitted array and 6(b) a compound lens system producing an expanded version of the emitted array;

[Fig.]Figs. 7(A-B) illustrate diagrams of emitted light signals passing through arrays of lenses. The array of lenses in 7(a) expands the diameter of light signals without changing their center spacing. The array of lenses in 7(b) expands the diameter and changes the direction of emitted light signals;

IN THE CLAIMS:

Please amend the claims as indicated below:

1.(Once amended) An optical sensing system for detecting target motion within a known environment, which comprises:

a vertical cavity surface emitting laser source with at least two laser signal emission ~~apertures~~;

at least one detector operationally responsive to laser signals;

a microprocessor operationally coupled to said at least one detector; and

a motion analysis module in communication with said microprocessor for determining object motion~~.~~;

wherein said laser source emits at least two laser signals into an environment ~~occupied by a target~~, said at least one detector ~~detects changes in~~ receives said at least two laser signals after said signals pass through said environment and interfere with a ~~detected object~~ target, and said microprocessor determines said target's motion ~~characteristics~~ based on differences between said signals received by said detector and input from said motion analysis module regarding object motion determination

5.(Once amended) An optical sensing system for detecting target motion

~~[sic] A [illegible] laser source comprises a vertical cavity~~

at least one detector operationally responsive to said laser source;

a microprocessor operationally coupled to said at least one detector;

a memory for storing characteristics of a monitored environment; and

a motion analysis module in communication with said microprocessor for determining object motion;

wherein said laser source emits at least two laser signals into an environment ~~occupied by a target~~, said at least one detector ~~detects changes in~~ receives said at least two laser signals after said signals pass through said environment and interfere with a ~~detected object~~ target, and said microprocessor determines said target's motion ~~characteristics~~ based on differences between said signals received by said detector, reference to said memory and input from said motion analysis module regarding object motion determination.